

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method for surface toughening of a ceramics sintered material cutting tool comprising, forming uniformly distributed linear dislocation structure in the subsurface regions of the ceramics sintered material cutting tool by using abrasives plastic working said ceramics sintered material cutting tool with an abrasive composed of fine particles, said fine particles having a convexly curved surface and having an average particle size of 0.1 $\mu\text{m}$  to 200 $\mu\text{m}$  and a Vickers hardness (HV) of ranging from 500 or more and a hardness (HV) of +50 or less to a value which is the hardness of said sintered material cutting tool plus 50, whereby a uniformly distributed linear dislocation structure is formed in subsurface regions of the ceramics sintered material cutting tool.

2. (Original) The method for surface toughening of a ceramics sintered material cutting tool of claim 1, wherein the dislocation density of uniformly distributed linear dislocation structure in the sub-surface regions of the ceramics sintered material cutting tool is in the range of from  $1\times 10^4$  to  $9\times 10^{13}\text{ cm}^{-2}$ .

3. (Currently amended) The method for surface toughening of a ceramics sintered material cutting tool of claim 1, wherein a said plastic working is carried out by shot blasting said

sintered material cutting tool with said abrasive particles at a pressure of 0.1 to 0.5 MPa, a shot blasting speed of 20m/sec to 250m/sec, a shot blasting amount of 50 g/m to 800 g/m and a shot blasting time of 0.1 sec/cm<sup>2</sup> or more to 60sec/cm<sup>2</sup> or less.

4. (Currently amended) The method for surface toughening of a ceramics sintered material cutting tool of claim 2, wherein the dislocation density of uniformly distributed linear dislocation structure in the sub-surface regions of the ceramics sintered material cutting tool is in the range of from  $1\times10^4$  to  $9\times10^{13}$  cm<sup>-2</sup>.

5. (Original) A long life ceramics sintered material cutting tool possessing a structure whose dislocation density of uniformly distributed linear dislocation structure in the sub-surface regions of the ceramics sintered material cutting tool is in the range of from  $1\times10^4$  to  $9\times10^{13}$  cm<sup>-2</sup>.

6. (New) A method for surface toughening of a ceramics sintered material cutting tool comprising plastic working said cutting tool with an abrasive composed of fine particles, said particles having a convex curved surface, an average particle size of 0.1  $\mu\text{m}$  to 200 $\mu\text{m}$  and a Vickers hardness (HV) ranging from 500 to a value which is the hardness of said sintered material cutting tool plus 50, said plastic working being carried out by shot blasting said sintered material cutting tool with said

abrasive particles at a pressure of 0.1 to 0.5 MPa, a shot blasting speed of 20m/sec to 250m/sec, a shot blasting amount of 50 g/m to 800 g/m and a shot blasting time of 0.1 sec/cm<sup>2</sup> or more to 60sec/cm<sup>2</sup> or less, whereby a uniformly distributed linear dislocation structure is formed in subsurface regions of the ceramics sintered material cutting tool.

7. (New) The method of claim 6 wherein the dislocation density of uniformly distributed linear dislocation structure in the subsurface regions of the ceramics sintered material cutting tool is in the range of from  $1\times10^4$  to  $9\times10^{13}$  cm<sup>-2</sup>.

8. (New) The method of claim 6 wherein the abrasive particles are selected from the group consisting of zircon, zirconia and mullite.

9. (New) The method of claim 6 wherein the surface toughened ceramics sintered material cutting tool is made of ceramics of silicon nitride or alumina or of high hardness distributed composite material.

10. (New) The method of claim 1 wherein the hardness of said abrasive particles is less than the hardness of said ceramics sintered material cutting tool.